

WHAT IS CLAIMED IS:

1. In a system comprising a network and one or more mobile stations (MSs) for enabling communications with the one or more MSs and for rescuing at least one MS having a connection with the network that has become a potentially failing connection, a method for limiting rescue attempts of the potentially failing connection, comprising:

5 identifying the potentially failing connection;
determining current rescue limitations for the potentially failing connection;
allowing an attempted rescue of the potentially failing connection if rescue is permitted based on the current rescue limitations; and
preventing the attempted rescue of the potentially failing connection if rescue is prohibited based on the current rescue limitations.

2. The method as recited in claim 1, the determination of current rescue limitations including consideration of preexisting rescue limitations determined prior to a start of the potentially failing connection or rescue parameters determined at a time of the potentially failing connection.

3. The method as recited in claim 1, the determination of current rescue limitations including determining that rescue attempts of the potentially failing connection will be limited to a predetermined number per connection.

4. The method as recited in claim 1, the determination of current rescue limitations including determining that a rescue attempt of the potentially failing connection will be allowed only if a predetermined amount of time has elapsed since the last rescue of the connection.

5. The method as recited in claim 1, the determination of current rescue limitations including determining that a rescue attempt of the potentially failing connection will be allowed only if less than a predetermined number of rescues of the connection have occurred within a predetermined amount of time.

6. The method as recited in claim 1, the determination of current rescue limitations including determining that a rescue attempt of the potentially failing connection will be prevented if the connection had been previously characterized as a poor connection.

7. The method as recited in claim 1, further including determining that a rescue attempt of the MS having the potentially failing connection will be prevented if a percentage of good frames previously received by that MS within a predetermined amount of time is less than a predetermined threshold percentage.

8. The method as recited in claim 1, further including determining that a rescue attempt of the MS having the potentially failing connection will be prevented if a percentage of frames previously transmitted by that MS within a predetermined amount of time is less than a predetermined threshold percentage.

9. The method as recited in claim 1, further including determining that a rescue attempt of the MS having the potentially failing connection will be prevented if a number of good frames previously received by that MS within a predetermined amount of time is less than a predetermined threshold number.

10. The method as recited in claim 1, further including determining that a rescue attempt of the MS having the potentially failing connection will be prevented if a predetermined number of failed retransmissions by that MS of a message requiring acknowledgement had previously been detected.

11. The method as recited in claim 1, the determination of current rescue limitations including determining current rescue limitations specific to a type of the potentially failing connection.

12. The method as recited in claim 1, the determination of current rescue limitations including determining current rescue limitations specific to a cause of the potentially failing connection.

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13. The method as recited in claim 1, the determination of current rescue limitations including determining current rescue limitations specific to a context of the potentially failing connection.

14. The method as recited in claim 1, the determination of current rescue limitations including adaptively determining current rescue limitations based on historical rescue success rates of the MS having the potentially failing connection or other MSs, in a particular geographical area or time period.

15. The method as recited in claim 1, the determination of current rescue limitations including adaptively determining current rescue limitations based on a similarity of conditions experienced by the MS having the potentially failing connection to conditions previously experienced by that MS or other MSs, and historical rescue success rates of the MS having the potentially failing connection or the other MSs.

16. The method as recited in claim 1, the determination of current rescue limitations including determining that a rescue attempt of the potentially failing connection will be allowed only if previous rescues of the connection were completed within a predetermined amount of time.

17. The method as recited in claim 1, the determination of current rescue limitations including determining that a rescue attempt of the MS having the potentially failing connection will be prevented if a percentage of time previously spent by that MS in a muted condition is greater than a predetermined threshold percentage.

18. The method as recited in claim 1, further including determining the current rescue limitations in accordance with commands input to the MS by a user.

19. The method as recited in claim 2, wherein the identification of the potentially failing connection and the determination of the current rescue limitations are performed by the network, the method further comprising communicating the preexisting rescue limitations from the network to the MS having the potentially failing connection in a rescue order;

wherein the allowing or preventing of the attempted rescue is determined by the MS in accordance with the rescue order.

20. The method as recited in claim 19, the rescue order comprising a specific rescue order, and wherein the allowing or preventing of the attempted rescue is dictated to the MS by the specific rescue order.

21. The method as recited in claim 19, the rescue order comprising a rescue control order containing control information, and wherein the allowing or preventing of the attempted rescue is determined by the MS in accordance with the control information contained in the rescue order.

22. The method as recited in claim 21, the control information including information specific to a type, cause, or context of the potentially failing connection.

23. The method as recited in claim 2, wherein the identification of the potentially failing connection and the determination of the current rescue limitations are performed by the MS having the potentially failing connection, the method further comprising communicating the preexisting rescue limitations from the MS having the potentially failing connection to the network in a rescue order;

wherein the allowing or preventing of the attempted rescue is determined by the network in accordance with the rescue order.

24. The method as recited in claim 23, the rescue order comprising a specific rescue order, and wherein the allowing or preventing of the attempted rescue is dictated to the network by the specific rescue order.

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25. The method as recited in claim 23, the rescue order comprising a rescue control order containing control information, and wherein the allowing or preventing of the attempted rescue is determined by the network in accordance with the control information contained in the rescue order.

5 26. The method as recited in claim 25, the control information including information specific to a type, cause, or context of the potentially failing connection.

10 27. In a system comprising a network and one or more mobile stations (MSs) for enabling communications with the one or more MSs, for rescuing at least one MS having a connection with the network that has become a potentially failing connection, and for limiting rescue attempts of the potentially failing connection in accordance with a rescue order, a method for assisting in the limiting of rescue attempts of the potentially failing connection, comprising:
at the network,
determining preexisting rescue limitations for the connection, and
communicating the preexisting rescue limitations from the network
15 to the MS having the connection in a rescue order.

20 28. In a system comprising a network and one or more mobile stations (MSs) for enabling communications with the one or more MSs, for rescuing at least one MS having a connection with the network that has become a potentially failing connection, and for limiting rescue attempts of the potentially failing connection, a method for assisting in the limiting of
rescue attempts of the potentially failing connection, comprising:
at the MS having the potentially failing connection,
identifying the potentially failing connection,
determining current rescue limitations for the potentially failing
connection,
25 allowing an attempted rescue of the potentially failing connection if rescue is permitted based on the current rescue limitations; and
preventing the attempted rescue of the potentially failing
connection if rescue is prohibited based on the current rescue limitations.

29. The method as recited in claim 28, further including:
at the MS having the potentially failing connection,
receiving preexisting rescue limitations from the network in a
rescue order prior to a start of the potentially failing connection, and
5 determining the current rescue limitations for the potentially failing
connection in accordance with the preexisting rescue limitations.

30. The method as recited in claim 29, the determination of the current rescue
limitations including consideration of the preexisting rescue limitations or rescue parameters
determined at a time of the potentially failing connection.

31. The method as recited in claim 28, the determination of current rescue
limitations including determining that a rescue attempt of the potentially failing connection will
be prevented if the connection had been previously characterized as a poor connection.

32. The method as recited in claim 28, the determination of current rescue
limitations including determining current rescue limitations specific to a type of the potentially
failing connection.

33. The method as recited in claim 28, the determination of current rescue
limitations including determining current rescue limitations specific to a cause of the potentially
failing connection.

34. The method as recited in claim 28, the determination of current rescue
20 limitations including determining current rescue limitations specific to a context of the
potentially failing connection.

35. The method as recited in claim 29, the rescue order comprising a specific
rescue order, and wherein the limiting of rescue attempts of the potentially failing connection is
dictated to the MS by the specific rescue order.

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36. The method as recited in claim 29, the rescue order comprising a rescue control order containing control information, and wherein the limiting of rescue attempts of the potentially failing connection is determined by the MS in accordance with the control information contained in the rescue order.

5 37. The method as recited in claim 36, the control information including information specific to a type, cause, or context of the potentially failing connection.

38. The method as recited in claim 28, further including determining the current rescue limitations for the potentially failing connection in accordance with commands input to the MS by a user.

39. In a system comprising a network and one or more mobile stations (MSs) for enabling communications with the one or more MSs, for rescuing at least one MS having a connection with the network that has become a potentially failing connection, and for limiting rescue attempts of the potentially failing connection in accordance with a rescue order, a method for assisting in the limiting of rescue attempts of the potentially failing connection, comprising:

at the MS having the connection, prior to a start of the potentially failing connection,
determining preexisting rescue limitations for the connection, and
communicating the preexisting rescue limitations from the MS
having the connection to the network in a rescue order.

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40. In a system comprising a network and one or more mobile stations (MSs) for enabling communications with the one or more MSs, for rescuing at least one MS having a connection with the network that has become a potentially failing connection, and for limiting rescue attempts of the potentially failing connection, a method for assisting in the limiting of rescue attempts of the potentially failing connection, comprising:

at the network,

identifying the potentially failing connection,

determining current rescue limitations for the potentially failing connection,

allowing an attempted rescue of the potentially failing connection if rescue is permitted based on the current rescue limitations; and

preventing the attempted rescue of the potentially failing connection if rescue is prohibited based on the current rescue limitations.

41. The method as recited in claim 40, further including:

at the network,

receiving preexisting rescue limitations from the MS having the connection in a rescue order prior to a start of the potentially failing connection, and

determining the current rescue limitations for the potentially failing connection in accordance with the preexisting rescue limitations.

42. The method as recited in claim 41, the determination of current rescue limitations including consideration of the preexisting rescue limitations or rescue parameters determined at a time of the potentially failing connection.

43. The method as recited in claim 40, the determination of current rescue limitations including determining that a rescue attempt of the potentially failing connection will be prevented if the connection had been previously characterized as a poor connection.

50. A communications system for enabling communications with one or more mobile stations (MSs) and for limiting rescue attempts of MSs having potentially failing connections, comprising:

one or more MSs, each MS having a MS processor; and
a network communicatively coupled to the one or more MSs;

wherein the MS processor of the at least one MS having the connection with the network is programmed for detecting when the connection becomes a potentially failing connection, determining current rescue limitations for the potentially failing connection, allowing an attempted rescue of the potentially failing connection if rescue is permitted based on the current rescue limitations, and preventing the attempted rescue of the potentially failing connection if rescue is prohibited based on the current rescue limitations.

51. The system as recited in claim 50:

the network having a network processor programmed for determining preexisting rescue limitations for at least one MS having a connection with the network and communicating the preexisting rescue limitations to the at least one MS having the connection in a rescue order; and

the MS processor of the at least one MS having the connection with the network further programmed for receiving the preexisting rescue limitations from the network and determining the current rescue limitations for the potentially failing connection in accordance with the preexisting rescue limitations.

52. The system as recited in claim 51, the MS processor further programmed for determining current rescue limitations by considering the preexisting rescue limitations or rescue parameters determined at a time of the potentially failing connection.

53. The system as recited in claim 50, the MS processor further programmed for determining current rescue limitations by preventing a rescue attempt of the potentially failing connection if the connection had been previously characterized as a poor connection.

54. The system as recited in claim 50, the MS processor further programmed for determining current rescue limitations specific to a type, cause, or context of the potentially failing connection.

55. The system as recited in claim 51, the rescue order comprising a specific rescue order, and wherein the allowing or preventing of the attempted rescue is dictated to the MS having the potentially failing connection by the specific rescue order.

56. The system as recited in claim 51, the rescue order comprising a rescue control order containing control information, and wherein the allowing or preventing of the attempted rescue is determined by the MS having the potentially failing connection in accordance with the control information contained in the rescue order.

57. The system as recited in claim 56, the control information including information specific to a type, cause, or context of the potentially failing connection.

58. The system as recited in claim 50, wherein the MS processor of the at least one MS having the connection with the network is further programmed for determining the current rescue limitations for the potentially failing connection in accordance with commands input to the MS by a user.

59. A communications network for assisting in limiting rescue attempts of at least one MS having a connection with the network that has become a potentially failing connection, the at least one MS capable of limiting the rescue attempts in accordance with a rescue order, the communications network comprising:

a network processor programmed for determining preexisting rescue limitations for the connection, and communicating the preexisting rescue limitations to the MS having the connection in a rescue order.

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60. A mobile station (MS) for limiting rescue attempts of the MS when the MS has a connection with a network that has become a potentially failing connection, comprising:

5 a MS processor programmed for detecting when the connection becomes the potentially failing connection, determining current rescue limitations for the potentially failing connection, allowing an attempted rescue of the potentially failing connection if rescue is permitted based on the current rescue limitations, and preventing the attempted rescue of the potentially failing connection if rescue is prohibited based on the current rescue limitations.

61. The MS as recited in claim 60, the network capable of communicating preexisting rescue limitations in a rescue order to the MS to assist in limiting the rescue attempts of the MS:

10 wherein the MS processor is further programmed for receiving the preexisting rescue limitations from the network in the rescue order and determining the current rescue limitations for the potentially failing connection in accordance with the preexisting rescue limitations.

62. The MS as recited in claim 61, the MS processor further programmed for determining current rescue limitations by considering the preexisting rescue limitations or rescue parameters determined at a time of the potentially failing connection.

63. The MS as recited in claim 60, the MS processor further programmed for determining current rescue limitations by preventing a rescue attempt of the potentially failing connection if the connection had been previously characterized as a poor connection.

64. The MS as recited in claim 60, the MS processor further programmed for determining current rescue limitations specific to a type, cause, or context of the potentially failing connection.

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65. The MS as recited in claim 61, the rescue order comprising a specific rescue order, and wherein the allowing or preventing of the attempted rescue is dictated to the MS having the potentially failing connection by the specific rescue order.

5 66. The MS as recited in claim 61, the rescue order comprising a rescue control order containing control information, and wherein the allowing or preventing of the attempted rescue is determined by the MS having the potentially failing connection in accordance with the control information contained in the rescue order.

67. The MS as recited in claim 66, the control information including information specific to a type, cause, or context of the potentially failing connection.

68. The MS as recited in claim 60, wherein the MS processor is further programmed for determining the current rescue limitations for the potentially failing connection in accordance with commands input to the MS by a user.

69. A communications system for enabling communications with one or more mobile stations (MSs) and for limiting rescue attempts of MSs having potentially failing connections, comprising:

a network having a network processor; and

at least one MS having a connection with the network;

20 wherein the network processor is programmed for detecting when a connection becomes a potentially failing connection, determining current rescue limitations for the potentially failing connection, allowing an attempted rescue of the potentially failing connection if rescue is permitted based on the current rescue limitations, and preventing the attempted rescue of the potentially failing connection if rescue is prohibited based on the current rescue limitations.

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70. The system as recited in claim 69:

each MS having a MS processor programmed for determining preexisting rescue limitations for the connection and communicating the preexisting rescue limitations to the network in a rescue order; and

5 the network processor further programmed for receiving the preexisting rescue limitations from the at least one MS having a connection with the network and determining the current rescue limitations for the potentially failing connection in accordance with the preexisting rescue limitations.

71. The system as recited in claim 70, the network processor further programmed for determining current rescue limitations by considering the preexisting rescue limitations or rescue parameters determined at a time of the potentially failing connection.

72. The system as recited in claim 69, the network processor further programmed for determining current rescue limitations by preventing a rescue attempt of the potentially failing connection if the connection had been previously characterized as a poor connection.

73. The system as recited in claim 69, the network processor further programmed for determining current rescue limitations specific to a type, cause, or context of the potentially failing connection.

74. The system as recited in claim 70, the rescue order comprising a specific
20 rescue order, and wherein the allowing or preventing of the attempted rescue is dictated to the MS having the potentially failing connection by the specific rescue order.

75. The system as recited in claim 70, the rescue order comprising a rescue control order containing control information, and wherein the allowing or preventing of the attempted rescue is determined by the MS having the potentially failing connection in
25 accordance with the control information contained in the rescue order.

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76. The system as recited in claim 75, the control information including information specific to a type, cause, or context of the potentially failing connection.

77. A mobile station (MS) for assisting in limiting rescue attempts of the MS when the MS has a connection with a network that has become a potentially failing connection, the network capable of receiving preexisting rescue limitations in a rescue order to limit the rescue attempts of the MS, the MS comprising:

a MS processor programmed for determining preexisting rescue limitations for the connection, and communicating the preexisting rescue limitations to the network in a rescue order.

78. A communications network for limiting rescue attempts of at least one MS having a connection with the network that has become a potentially failing connection, the communications network comprising:

a network processor programmed for detecting when the connection becomes the potentially failing connection, determining current rescue limitations for the potentially failing connection, allowing an attempted rescue of the potentially failing connection if rescue is permitted based on the current rescue limitations, and preventing the attempted rescue of the potentially failing connection if rescue is prohibited based on the current rescue limitations.

79. The communications network as recited in claim 78, the at least one MS capable of determining and communicating preexisting rescue limitations for the connection in a rescue order to assist in limiting the rescue attempts:

wherein the network processor is further programmed for receiving the predetermined rescue limitations from the at least one MS in the rescue order and determining the current rescue limitations for the potentially failing connection in accordance with the preexisting rescue limitations.

80. The communications network as recited in claim 79, the network processor further programmed for determining current rescue limitations by considering the preexisting rescue limitations or rescue parameters determined at a time of the potentially failing connection.

5 81. The communications network as recited in claim 78, the network processor further programmed for determining current rescue limitations by preventing a rescue attempt of the potentially failing connection if the connection had been previously characterized as a poor connection.

82. The communications network as recited in claim 78, the network processor further programmed for determining current rescue limitations specific to a type, cause, or context of the potentially failing connection.

83. The communications network as recited in claim 79, the rescue order comprising a specific rescue order, and wherein the allowing or preventing of the attempted rescue is dictated to the network by the specific rescue order.

84. The communications network as recited in claim 79, the rescue order comprising a rescue control order containing control information, and wherein the allowing or preventing of the attempted rescue is determined by the network in accordance with the control information contained in the rescue order.

20 85. The network as recited in claim 84, the control information including information specific to a type, cause, or context of the potentially failing connection.

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86. A communications system for enabling communications with one or more mobile stations (MSs) and for limiting rescue attempts of MSs having potentially failing connections, comprising:

one or more MSs; and

network means communicatively coupled to the one or more MSs, at least one MS having a connection with the network means;

the at least one MS having the connection with the network means for detecting when the connection becomes a potentially failing connection, determining current rescue limitations for the potentially failing connection, allowing an attempted rescue of the potentially failing connection if rescue is permitted based on the current rescue limitations, and preventing the attempted rescue of the potentially failing connection if rescue is prohibited based on the current rescue limitations.

87. A communications network for assisting in limiting rescue attempts of at least one MS having a connection with the network that has become a potentially failing connection, the at least one MS capable of limiting the rescue attempts in accordance with a rescue order, the communications network comprising:

network means for determining preexisting rescue limitations for the connection, and communicating the preexisting rescue limitations to the MS having the connection in a rescue order.

88. A mobile station (MS) for limiting rescue attempts of the MS when the MS has a connection with a network that has become a potentially failing connection, the MS comprising:

means for detecting when the connection becomes the potentially failing connection, determining current rescue limitations for the potentially failing connection, allowing an attempted rescue of the potentially failing connection if rescue is permitted based on the current rescue limitations, and preventing the attempted rescue of the potentially failing connection if rescue is prohibited based on the current rescue limitations.

89. A communications system for enabling communications with one or more mobile stations (MSs) and for limiting rescue attempts of MSs having potentially failing connections, comprising:

a network means; and

at least one MS having a connection with the network;

the network means for detecting when a connection becomes a potentially failing connection, determining current rescue limitations for the potentially failing connection, allowing an attempted rescue of the potentially failing connection if rescue is permitted based on the current rescue limitations, and preventing the attempted rescue of the potentially failing connection if rescue is prohibited based on the current rescue limitations.

90. A mobile station (MS) for assisting in limiting rescue attempts of the MS when the MS has a connection with a network that has become a potentially failing connection, the network capable of receiving preexisting rescue limitations in a rescue order to limit the rescue attempts of the MS, the MS comprising:

means for determining preexisting rescue limitations for the connection, and communicating the preexisting rescue limitations to the network in a rescue order.

91. A communications network for limiting rescue attempts of at least one MS having a connection with the network that has become a potentially failing connection, the communications network comprising:

means for detecting when the connection becomes the potentially failing connection, determining current rescue limitations for the potentially failing connection, allowing an attempted rescue of the potentially failing connection if rescue is permitted based on the current rescue limitations, and preventing the attempted rescue of the potentially failing connection if rescue is prohibited based on the current rescue limitations.